

M.O.S.I.S UI 2.0

Project Requirements

Domain Requirements

- The system-to-be must present the left and right camera feeds to the user.
- The system-to-be must present temperature, Ph, dissolved oxygen, pressure, study status, and local IP address to the user.
- The system-to-be must have the means to switch between different study profiles.
- The system-to-be must control the lighting on the microscope cameras according to the study profile.
- The system-to-be must control the shot type on the microscope cameras according to the study profile.
- The system-to-be must control the ISO of the microscope cameras.
- The system-to-be must control the aperture size of the microscope cameras.
- The system-to-be must control the shutter speed of the microscope cameras.
- The system-to-be must control the white balance of the microscope cameras.
- The system-to-be must call the calibration functions of the microscope sensors.
- The system-to-be must have a database that stores:
 - Left Camera Media
 - Right Camera Media
 - Shot type
 - ISO 8601 Date Stamp (yyyy-MM-ddTHH:mm:ss.zzz)
 - Temperature
 - Ph
 - Pressure
 - Dissolved Oxygen
 - Illumination Type
 - ISO
 - Aperture Size
 - Shutter Speed
 - White Balance
- The system-to-be must store the captured data into a browsable format.
- The system-to-be must use the on board buttons to control the functions of the microscope.

Interface Requirements

- The system-to-be must present the feed from left and right cameras, each at 24FPS and a downscaled 400x400 resolution.
- The system-to-be must present: temperature, Ph, pressure, dissolved oxygen, study status, ISO, aperture size and shutter speed, white balance and IP address.
- The system-to-be must update temperature, Ph, pressure, dissolved oxygen and local IP address, study status, every two seconds due to the existing UART implementation.
- The system-to-be lighting enumeration contains:

- None
 - Infrared
 - Ultraviolet
 - Visible Spectrum
- The system-to-be shot type enumeration contains:
 - Single
 - Burst
 - Telescopic
 - Time Lapse
 - Video
- The system-to-be must initiate a capture with a single button.
- The system-to-be must shutdown the operating system safely with a single button.
- The system-to-be must stop capture with a single button.
- The system-to-be must be able to navigate through the study profiles using only two buttons.
- The system-to-be must show the currently loaded study profiles using a single button.
- The system-to-be must store all files related to a single study entry in a single directory.
- The system-to-be must store a JSON file with all data and metadata from the study entry along in the same directory as the study entry.
- The system-to-be must control the focus of the cameras one stepper motor step at a time using two buttons.
- The system-to-be must control the ISO of the cameras using two buttons.
- The system-to-be must show all available camera ISO using a single button.
- The system-to-be must control the aperture size of the cameras using two buttons.
- The system-to-be must show all available aperture sizes using a single button.
- The system-to-be must control the shutter speed of the cameras using two buttons.
- The system-to-be must show all available shutter speeds using a single button.
- The system-to-be must control the white balance of the cameras using two buttons.
- The system-to-be must show all available white balance using a single button.

22/09/2023

Date

David Repollet Otero

Name

David Repollet Otero

Signature

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 - Illumination Type
 - ISO
 - Aperture Size
 - Shutter Speed
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- The system-to-be lighting enumeration contains:

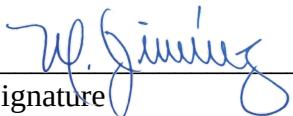
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- The system-to-be must control the shutter speed of the cameras using two buttons.
- The system-to-be must show all available shutter speeds using a single button.
- The system-to-be must control the white balance of the cameras using two buttons.
- The system-to-be must show all available white balance using a single button.

Sep. 24, 2023

Date

Dr. Manuel Jimenez

Name


Signature